Vol. XI JANUARY, 1900 No. 1

THE

NATIONAL GEOGRAPHIC MAGAZINE

CONTENTS

PAGE

THE PHILIPPINE ISLANDS AND THEIR ENVIRONMENT
With map.....HON. JOHN BARRETT 1

THE CAPE NOME GOLD DISTRICT
With map and illustrations.....F. C. SCHRADER 15

THE IDAHO AND MONTANA BOUNDARY LINE
With diagram and illustration.....RICHARD U. GOODE 23

THE COPPER RIVER DELTA.....E. D. PRESTON 29

OUR NEW POSSESSIONS AND THE INTEREST THEY ARE EXCITING.....O. P. AUSTIN 32

THE TOTAL ECLIPSE OF THE SUN, MAY 28, 1900....F. H. BIGELOW 33

THE CENSUS OF 1900.....F. H. WINES 34

Geographic Nomenclature, p. 36; Puerto Rico, not Porto Rico, p. 37; Geographic Literature, p. 38; Correspondence, p. 40

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THE

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The list of contributors to the NATIONAL GEOGRAPHIC MAGAZINE includes nearly every United States citizen whose name has become identified with Arctic exploration, the Bering Sea controversy, the Alaska and Venezuela boundary disputes, or the new commercial and political questions arising from the acquisition of the Philippines.

The following articles will appear in the Magazine within the next few months:

"Russia," by Professor Edwin A. Grosvenor of Amherst College, Massachusetts.

"The Venezuelan Boundary," by Mr Marcus Baker of the Venezuelan Commission.

"The Samoan Islands," by Mr Edwin Morgan, Secretary of the Samoan Commission.

"British South Africa and the Transvaal," by Col. F. F. Hilder, Bureau of American Ethnology.

"The Characteristics of the Filipinos," by Hon. Dean C. Worcester of the Philippine Commission.

"Explorations on the Yangtse-Kiang, China," by Mr Wm. Barclay Parsons, C. E., surveyor of the railway route through the Yangtse-Kiang Valley.

"Patagonia," by Mr J. B. Hatcher of Princeton University, who has passed the principal part of the last four years in the exploration of this little-known region.

The index for volume X, 1899, will accompany the February number.

XIIM

THE PHILIPPINE ISLANDS AS THE GEOGRAPHICAL CENTER OF THE FAR EAST

THE

NATIONAL GEOGRAPHIC MAGAZINE

VOL. XI JANUARY, 1900 No. 1

THE PHILIPPINE ISLANDS AND THEIR ENVIRONMENT*

By Hon. JOHN BARRETT,

Late United States Minister to Siam

In accepting the invitation of the National Geographic Society, I am not unmindful of the honor conferred or of the responsibility resting upon me to tell the truth about a portion of the world which has such an important bearing now upon our national welfare. It will be my simple purpose to consider within the limits of time at our disposal the Philippine Islands as seen and known by me in times both of peace and war, including such description of their environment or of neighboring countries as will best indicate the commercial and strategic value of their location. This discussion will be no effort at oratory or rhetoric, but an honest endeavor to tell you what I learned with unprejudiced eyes.

The invitation to speak under the distinguished auspices of the National Geographic Society suggested that the treatment of the subject should particularly include the material and geographical features of the Philippines and their environment. It would not be wise, therefore, to enter upon any extended argument of the moral problems involved in our occupation of the islands, although they are important, except insomuch as they are interwoven with our political status in the Pacific, which in turn is closely associated with commercial and geographical considerations.

During five years' residence in the far East, four of which it was my honor to be the United States minister to Siam, it was also my privilege to travel not only well over Siam, which today is making more progress than any other Asiatic land except Japan, but also, in

* A lecture delivered before the National Geographic Society, December 8, 1899.

greater or less degree, through China, Korea, Siberia, and Japan on the north and Burma, the Malay Peninsula, Cambodia, Java, Borneo, and the Philippines on the south, going first to the latter without any thought of their ever coming under the American flag.

An extended trip through the Philippines some years ago, in times of peace, and a protracted stay again later, in times of war and insurrection, from May, 1898, to April, 1899, will, I trust, enable me to bring forward a few facts that will be of interest.

IMPORTANCE OF LOCATION

First let us consider the location of the Philippines and of Manila. The great importance of this point is too often overlooked in the discussion of the islands, though nothing can have a more direct bearing on their practical value to the United States. We have often thought of the Philippines in a general way with reference to the far East, and we perhaps have read extensively about their resources, physical characteristics, and people, but we have not given sufficient attention to the remarkable position which they occupy in relation to other lands.

The map of trans-Pacific countries is a most fascinating study. What it reveals is a series of impressive facts. From Melbourne, in Australia, on the south, to Vladivostok, on the north, is a magnificent coast line which reaches away for eight or nine thousand miles, and upon which debouch over five hundred millions of people. Without consulting the map, we do not always remember how closely connected Australia is with the continent of Asia. This coast line, of which the Philippines are one of the chief outposts, is only broken here and there by very narrow straits, while everywhere it is indented with harbors and bays, upon which, especially in Asia, there are located great cities or commercial entrepôts. As we travel up and down from Australia to Japan we find that the Philippines are the very ideal center of all these lands that face the Pacific. The more one studies the far East the more is he impressed with the importance of this location with reference particularly to control of the commerce and politics of the future. Already the foreign trade of Asia, the East Indies, and Australasia amounts to the grand total of two billion dollars, of which the United States at the present time has a small proportion. That trade, although large in itself, is small in view of the total population of that part of the world, and is yet in the infancy of its development and possibilities. If it is two billion dollars now, it will surely go on within the near future to three or four bil-

lion dollars, of which America should eventually have the controlling share if she will hold the great advantage which she now possesses by the occupation of the Philippines, where she can have a distributing and receiving point to come in close contact with these millions of people and of commerce.

I contend that Manila occupies a position of immeasurable opportunity in comparison with the other great ports or cities of the Asian and Australian coast line. That you may obtain a concrete idea of what I mean, let me picture how Manila stands with reference to neighboring points. Let us draw a circle on a radius of two thousand miles, with Manila as the center. As we swing it around we find that this charmed circle takes in such distantly separated points as Yokohama, Vladivostok, and Tientsin on the north and Port Darwin, in Australia, and Batavia, in Java, on the south. It reaches east to include Guam and the Carolines and west to include Bangkok, in Siam, and Rangoon, in Burma. A similar circle drawn around any other port does not include so many important points. I would not imply that Manila will ever take the place of Hongkong, Shanghai, or Singapore, or even equal them in the race for commercial and political supremacy, because they already have a wonderful start; but there is abundant reason why Manila should become a great trade center to divide their business, and at least be the chief point through which America shall carry on her growing transactions with Asia's millions. It must be remembered that we have only recently entered this vast arena with any prospects of being the chief factor in trade. When we fully realize and improve our opportunities, then we should build up a great American city at Manila as the English have prosperous ports at Hongkong and Singapore, the Dutch at Batavia, and the French at Saigon.

Manila Bay opens on the South China Sea, which is teeming with the commerce of the Orient as the Great Lakes of America are busy with the trade of our interior. But more than that, there pass up and down through this sea, within hail as it were of Manila, the mighty fleet of ocean craft that crowd through the Suez Canal and pass Singapore to and from Europe and the far East. Formerly these vessels never thought of stopping at Manila or having regular connections. It was always Spain's policy to keep the Philippines in the background. They were enshrouded in mystery; and even at Hongkong, only 630 miles away, with her great trade of $250,000,000 per annum, there was no just appreciation of the opportunities in the Philippines.

The growing fleet of merchant vessels that ply between China and Australia are finding that Manila is on their direct route and are already stopping, both coming and going. The time must soon come when the majority of the steamers that cross the Pacific from our own shores will make Manila their terminal point instead of Hongkong, or provide themselves with the best of connections. Then there are unlimited possibilities for the development of coasting trade, with Manila as the base and Yokohama, Kobe, Port Arthur, Chifu, Shanghai, Amoy, Hongkong, Saigon, Bangkok, Singapore, Batavia, Port Darwin, and Sydney as objective points.

VAST NEIGHBORING OPPORTUNITIES

Moreover, in all the attention that we have been giving in recent years to Japan and China, we have overlooked the mighty opportunities of southern Asia and of the rich East Indian Archipelago, which in turn rests, as it were, upon growing Australia. Every one knows what a great future awaits the latter country. Just north of it, and near neighbors to the Philippines, are such countries, undeveloped, but possessing splendid resources, as Papua or New Guinea, Borneo, and Sumatra, any one of which is larger than Texas and California combined, and yet containing a very small population. They may be intended by a wise Providence for the overflow that must come some day from the continent of Asia. Only fifteen hundred miles to the southwest of Manila, and just below Borneo, is Java, commonly called the Garden of the East, where the Dutch have worked wonders. A more peaceful and prosperous land, taken as a whole, cannot be found in the wide world. This island, of the same area as Luzon, and yet not so resourceful, supports a population of over twenty millions and has a foreign trade that amounts to $260,000,000 per annum. How few people in America realize that Java is covered with a network of railways and has large, prosperous cities, whose harbors are frequented by the merchant vessels of all lands. Here we have a lesson as to the possibilities before us in the Philippines.

The occasional insurrections that occur in certain parts of Java and Sumatra are tolerated or allowed by the Dutch largely for the purpose of having a reason for maintaining an army and navy. It is a well-known fact in the Orient that Holland could end all possibilities of local wars there if the officers of her army and navy were so inclined.

Only 1,300 miles southwest from Manila is Singapore, Britain's proud gateway to the Orient, which has an annual commerce of

$180,000,000. Just north of Singapore are the protected Malay states, which again prove to us what we can do in the Philippines with the natives when we once establish peace, order, and good government. The Filipinos are a branch of the Malay race and closely akin to the people living in the Malay Peninsula, as well as to those in Java.

A little farther to the north, at the head of the Gulf of Siam, is Bangkok, the prosperous capital of the progressive kingdom of Siam. This is one of the unknown lands of the world, but yet one of the most interesting and resourceful. With a population of eight millions, it already has a foreign trade of $25,000,000, which will soon grow to five times that amount. With a king who now ranks as one of the ablest statesmen of all Asia, and with material improvements and political reforms being made throughout his entire domain, Siam has a brilliant future before her.

Just across the South China Sea and east of Siam are the French possessions of Cambodia, Annam, and Tonkin, where even the French, who are not generally regarded as successful colonists, have established peace and prosperity among twenty millions of people and developed a foreign trade, despite their "closed door" methods, of $50,000,000 per annum. Its capital, Saigon, is a beautiful city—a little Paris in the Orient.

CHINA'S GREAT FIELD

Having now noted the importance of the environment of the Philippines on the south and west, which means so much for the future prosperity of the islands, in the same way that the prosperity of any American city or state depends largely on the surrounding states and cities, their population and resources, let us now look to the north. The distance from the Philippine coast to China on the northwest is only six hundred miles. Formosa is barely more than four hundred miles away, and has in itself a great material future from which Japan hopes to reap a decided benefit.

Hongkong, which has always been the chief point of approach to the Philippines and is only six hundred and thirty miles from Manila, is a monument to British enterprise. Its annual trade exchange is now passing the $250,000,000 mark. The day I left there to return to America I counted over 60 merchant vessels loading and unloading in her harbor. We stand now looking upon the great empire of China, which affords America the most tempting field of trade expansion yet undeveloped in the world. Here is a vast land of four

million square miles, greater than all the United States, with a population commonly estimated at 350,000,000, or five times that of the United States, and which has only 350 miles of railways. This one point, to me, is a complete description in itself of her possibilities. It is difficult to imagine the extent of the material development that must follow the early construction of extensive trunk and branch lines of railway. There is crying need now for 25,000 miles of railroads, which means a safe investment, including what goes with such construction, of $500,000,000.

To impress upon you further China's possibilities, let us look at what may be the limits of her trade when once she has a good government established and her interior is opened up. We will obtain our conclusions by comparison with Japan. Japan, which under ordinary conditions would not have a greater buying and selling capacity than China, has built up in twenty years a foreign trade from $30,000,000 to $240,000,000. The present population of Japan is forty millions, giving a trade of $6 *per capita*. Now, let us apply that rate of $6 to a most conservative estimate of China's population, two hundred and fifty million, and we have a possible annual trade of $1,500,000,000. If you divide this in half for the imports, you have $750,000,000. If you look over the list of Chinese imports, you will find that two-thirds of them can be supplied by the United States if she will enter into earnest competition with other countries. Already we have shown what we can do by developing in northern China within a few years an annual trade of $10,000,000 in manufactured cotton goods, and in southern China of $6,000,000 in flour. In both lines our sales were inconsiderable ten years ago.

If any one says that China has not a great buying and selling capacity when she is opened up, he must remember the experience of the Yangtze Valley. Some forty years ago one or two ships and $500,000 represented the trade of that mighty stream. Today you can go up the Yangtze 600 miles, from Shanghai to Hankow, in finer steamers than those plying between New York and Albany, and the annual trade of the river is estimated at nearly $75,000,000. From this you can conceive what must come when the vast interior sections of China are covered with railways, and the same development follows that has characterized the Yangtze River. It is not discouraging that Chinese trade is now only $250,000,000 a year, or $1 per head. It rather shows what great opportunities remain yet to be

developed by the United States and other lands. That same argument might have been advanced against Japan twenty years ago.

In the limits of time at my disposal I cannot discuss Japan specifically beyond saying that there never was a time in the history of our relations when we were closer to that country in commerce and trade than now. Korea is just opening to us, and is providing fields of exploitation which we must not neglect. In Russian territory to the north there are also opportunities which we must fully realize in considering the value of Oriental trade. Already we are doing much there which is encouraging for the future.

Before closing my references to China I cannot refrain from emphasizing the importance of our government's efforts to maintain the "open door" of trade and preserve the integrity of the Chinese Empire. The "open door" simply means that we shall have the same rights of commerce throughout all China as are possessed by any other country and as guaranteed by the treaties. We have everything to lose and nothing to gain by the division of the Chinese Empire. Now, we can look forward to controlling the larger portion of her trade in successful competition with other nations; but if China is divided or the door is closed, whatever country has the predominant influence in a certain portion of China will establish such regulations, directly or indirectly, as will prevent our exports from competing successfully with its own.

MATERIAL VALUE OF PHILIPPINES

Now, what shall we say of the Philippines themselves in their material aspects? We have already shown their geographical, strategical, and commercial relations to the rest of the Orient. Under depressing Spanish influences there was developed in the Philippines an annual trade of $33,000,000. Under American control and with American enterprise and capital this surely must be enlarged within the next ten years to $150,000,000. If the British, Dutch, French, and other nationalities have been successful in accomplishing the results already shown in dependencies less resourceful than the Philippines, it is a confession of weakness if we cannot outstrip them in this work. The Philippines are blessed with an unusual number of great staple products, of whose possibilities I took careful note as I traveled through the islands. Chief among these are hemp, tobacco, sugar, copra or the dried meat of the cocoanut, and rice. The raising of and the trade in these staples have been developed to their present

status with practically the same methods and conditions as existed many years ago. New methods and additional capital will quadruple the output and bring so much more wealth to the country. The lesser products of the country include coffee, cocoa, cocoanut, vanilla, pepper and other spices, indigo, and a great variety of fruits characteristic of the tropics. There are sections where Indian corn thrives, while strawberries and blackberries have been grown with success in the northern plateaux. There are, of course, many other products of the soil, but here I am only calling attention to the principal ones which attracted my eye in passing. The tobacco is grown in the northern section of Luzon, in the valley of the Cagayan River; rice in the provinces between Manila and Dagupan, in the center of Luzon, and hemp in the southeastern portion of Luzon. In the Visayan Islands, as well as in parts of Mindanao, sugar is the chief product, while the pearls that please the vain world come from the Sulu group. Thus it will be seen that the products of the islands are well distributed throughout their entire extent.

The wealth in minerals and metals is not fully known yet, but there are sufficient indications to enable us to conclude that their resources in these lines will be worth careful development. There are numerous outcroppings of coal and iron ore, with indications of copper, lead ore, tin, and platinum; also there are found sulphur, mercury, alabaster, jasper, and marble. The more precious product of gold undoubtedly exists in paying quantities, while there are some favorable signs of silver.

On the extensive ranges of mountains in Luzon and in Mindoro and Mindanao are to be found forests of most valuable woods. The variety is surprising. It includes everything from soft palm and bamboo to ebony and ironwood. There is abundant material on the one hand for furniture and cabinets, and on the other for ship-building and heavy house construction.

LAND CONFORMATION AND AREA

As I traveled from Aparri, on the north end of Luzon, south through that island, thence through the Visayan group, then to Zamboanga, in Mindanao, I was impressed everywhere by the marvelous intermingling of well-watered, extensive valleys with broad, fertile plateaux and high forested mountains. The conformation of the land impresses the traveler as being suited not only for unlimited cultivation, but for the support of a great population. The number of rivers and lakes

navigable for small craft during a good part of the year is large. No other group of islands in the world possesses so many harbors and bays suited for inter-island traffic. The separation of the group into many islands has a most distinct advantage, which we do not fully appreciate. It provides highways of water, which are always there, and permits frequent and easy communication with all important points. The Philippines are more valuable to us divided as they are than if they were one broad extent like Borneo. This breaking up will also be of great assistance in preventing serious insurrections in the future.

The area of the Philippine Islands, 115,000 square miles, according to the best surveys, is more fully appreciated when we say that it is approximately equal to the six New England States and New York. Luzon would cover the State of New York, while Mindanao would hide the State of Maine. The Visayan Islands, with Palawan, Mindoro, and the Sulu group, would equal Vermont, New Hampshire, Rhode Island, Massachusetts, and Connecticut.

As the possibilities of railway construction showed what may take place in China, so likewise do they teach us the extent of the field of development in the Philippines. In this area of 115,000 square miles, with a population of eight millions, there are only 135 miles of railway, or between Manila and Dagupan. According to the best European experts who have traveled through the islands, there is immediate need for the building of from 1,000 to 1,500 miles of railway, a safe investment, including accessories, of from $50,000,000 to $75,000,000. For instance, the great Cagayan Valley of Luzon should be tapped by a line from Manila, while other roads could be built in various directions where there are freight and people to carry. Down in Mindanao are valleys as large as the State of Connecticut which can only be developed properly by the construction of railways. A score of similar opportunities could be named on a greater or less scale.

CONDITIONS OF CLIMATE

As to the climate, it can be said that the dangers of the tropics are grossly exaggerated by those unfamiliar with them. After a residence of five years in the very heart of the tropics, I will say that men can keep well and vigorous there if they exercise ordinary moderation and care and absent themselves at reasonable periods in northern climes for rest and change, as men do in our American cities during the heat of summer. The Philippines contain most favorable conditions for offsetting the disadvantages of mere tropical location. At various

points up and down the entire length of the islands are lofty mountains, on the higher slopes of which one can reach at any time of the year an atmosphere that is practically temperate and always most refreshing and invigorating. Within near distance of Manila are mountains which can be utilized for hotels and barracks, which our government officials, officers, and soldiers can seek for change and rest during the brief period which is oppressively hot. As soon as means of communication are established between Manila and such points, it will be surprising to witness the effect upon the foreign inhabitants. What an army experiences in the severe tests of warfare in the tropics is not a just measure of the conditions of ordinary life. No one, I think, would contend that the Philippines are an ideal home for the American laborer, but they afford broad opportunities for men who occupy managing or directing positions. The natives and the Chinese will provide the ordinary day laborer in abundance.

THE PEOPLE OF THE ISLANDS

Of the people who inhabit the Philippine Islands I can say, after extended acquaintance with them, that their good qualities far outweigh their bad qualities. When they are not misled or misguided by ambitious leaders in regard to America and the American people, they will become peaceful subjects of our government. When once order is fully established, there will be little or no spirit of insurrection manifesting itself, except where now and then, as in any land, some headstrong, unscrupulous leader may endeavor to resist the government. The majority of the Filipinos are far above the level of savages or barbarians and possess a considerable degree of civilization. It is the small minority that are wild and untamed in life, habits, and system of government. It is my honest opinion that we shall be able to develop there a large degree of autonomy in the interior provinces and towns, and gradually from year to year make the islands approach nearer and nearer to a condition of self-government something like that of Canada or Australia. It may take a considerable period of years, but the people are naturally quick to learn, and among them there are undoubtedly many able men to hold the more responsible posts.

Too much credit cannot be given the Philippine Commission appointed by President McKinley, consisting of President Schurman, Admiral Dewey, General Otis, Colonel Denby, and Dr Worcester, for

their labors and for the wisdom of their report. If the methods they recommend are followed closely, there is little doubt that the ends desired will soon be accomplished.

AGUINALDO AND HIS POWER

Of Aguinaldo I can say that he is undoubtedly a man of much executive capacity. He has also a degree of personal magnetism, mingled with sufficient persistency, energy, and shrewdness to be a successful leader of his people. He does not, however, impress one as possessing stability of character. It is difficult, in conversing with him, to catch and hold his eye. His glance could be called shifting. He dresses with remarkable taste and neatness, and makes a favorable impression on those who meet him, but he does not inspire confidence among foreigners. Were temptations to personal power removed from him, I believe that he would be a greater influence for good than for wrong, but under ordinary circumstances his personal ambition controls his motives and methods. Having known him first at Hongkong, before he returned to the Philippines, and later at Cavite, Bakor, and Malolos, I speak from extended acquaintance, in which I was able to note carefully his characteristics. Having been familiar with what passed between him and Admiral Dewey, and having discussed the matter repeatedly with both of them, I can say, in utmost frankness and honesty, that Admiral Dewey never, by written or spoken word, gave Aguinaldo any assurances whatsoever of independence. He simply and only treated him as a friend fighting a common enemy. Aguinaldo, however, with natural shrewdness, saw the opportunity to impress upon his people the fact that he was supported by the American Government, and so told them; otherwise it would have been difficult to secure their general support in forming a government and in mobilizing an army. This fact was often impressed upon me by the Filipino leaders who were not entirely in sympathy with Aguinaldo, but understood his methods and plans.

When men declare that we are shooting independence into the Filipinos, or are establishing a government without the consent of the governed, they must bear in mind, first, that Aguinaldo's government was established almost entirely by the use or show of force, in that he organized an army at Cavite and then sent garrisons to all important points, from Aparri on the north to Zamboanga on the south, everywhere impressing the people, who had no modern arms, with his strength and compelling them to acknowledge his authority;

second, that never have one-fourth of the people at large in the islands been in active sympathy with Aguinaldo, and not that number would have supported him had he not exhibited so much armed force and allowed them to be misled in regard to the intentions of the American Government; third, that if an American army of five thousand men had been landed at Cavite at the same time Admiral Dewey destroyed the Spanish fleet, it would have been received by the people with joyous acclaim, and would have been able to go through the entire length of the islands, heartily welcomed by the people, with no thought of resisting us. Several Filipino leaders admitted to me, in the presence of some of our army officers, that there would never have been active resistance to the United States Government, and we would hardly have heard of Aguinaldo except as a former leader, if we had been in a position to send our garrisons where Aguinaldo sent his at the beginning of our occupation of the Philippines. Our government, however, cannot be blamed for not doing this, because it was a physical impossibility to have landed an army at Cavite when Dewey arrived there, and in those days we did not dream that Aguinaldo's fighting the Spaniards meant the long warfare with him which has since followed.

FALSE EDUCATION OF THE PEOPLE

It is well to bear in mind that there has at no time been any serious resistance to us by the people in any part of the islands where the Tagaloc garrisons or Tagaloc army had not already been located or had not operated. A most extensive system of false education, which is not generally known in America, was also carried on among the Filipino masses during the long period between the fall of Manila, in August, 1898, and the outbreak on February 4, 1899. By a pernicious system of circulars, letters, and newspapers printed from the presses of Manila and Malolos the people were taught to believe most misleading reports about the American people and the American Government. Men, women, and children were exhorted to distrust us, and lies without limit were told of our own government to men and women to make them fear and hate us. I have in my possession many illustrations of this lying literature. Added to this was the constant hope of the Filipinos, inspired by matter that came from America, that the turn of political conditions here would cause the United States to withdraw from the Philippines and establish Aguinaldo at the head of an independent government. Their leaders

never lost an opportunity to exhort their army and people to the belief that the American people would force their President to haul down the American flag. This is well known to every man who, like myself, came into close association with the Filipino army and people.

In considering the favorable account that I give of our opportunities in the Philippines and in surrounding countries, I would ask all those who are skeptical about both the present and the future to bear in mind that my conclusions are not post-bellum opinions, adapted to the minute or to be in line with public sentiment. Before I ever dreamed that the American flag would fly over the Philippines, I outlined in official reports, in letters to chambers of commerce, and in magazine articles America's great opportunities for the extension of her trade and influence in far eastern countries, including the Philippines, and hammered away year after year endeavoring to arouse greater interest than existed. At that time I went on record as saying that after having traveled through all the Asiatic lands, I believed that, in proportion to area and population, the Philippines surpassed them all in variety of resources and undeveloped opportunities. What I say now is simply in confirmation of former contentions.

If you were to ask me to give some of the necessary immediate influences that would assist in making America forever the paramount power of the Pacific, I would enumerate: First, permanent sovereignty over the Philippines; second, construction of the trans-isthmian canal; third, preservation according to the treaties of our trade rights throughout all China; fourth, the laying of a trans-Pacific cable. Further considerations of immediate importance are the early sending of a commission to fully investigate and report on Asiatic markets, as outlined in the forceful message of President McKinley, the upbuilding or reasonable subsidizing of our merchant marine, and—a new but important proposition—the extension of our parcel post system of mails to the far East to compete with similar European systems.

EFFECTS OF DEWEY'S VICTORY

In concluding I can give you no better argument in favor of our meeting our responsibilities bravely and successfully in the Philippines than the experience there of the representatives of the United States Government before and after Admiral Dewey sailed into Manila Bay and destroyed the Spanish fleet. Prior to May 1, 1898, there is no denying that American prestige, influence, and commerce among

Asia's 500,000,000 were at a low ebb, despite the best and the faithful labors of ministers and consuls. In Japan, in China, in Korea, and in Siam the United States was regarded as a second or third-rate power. While we ministers were treated with differential and patronizing consideration, we were not potent factors like our colleagues from Great Britain, Russia, Germany, and France. In trade, the agents of our business houses were endured, but not welcomed by the heads of great European and native firms in the far East. With the battle of Manila Bay there came a mighty and a marvelous change, of which I cannot speak in too strong terms, and the truth of which will be confirmed by every American who was familiar with the situation. There seemed to sweep up and down this 5,000 miles of coast line, and far into the interior, a tidal wave of American prestige, which left its trace and influence not only in the capitals of politics and trade but among the masses of distant provinces; and all at once ministers and consuls found themselves the representatives of a first-class power and standing shoulder to shoulder with the representatives of European nations, if not even leading them in influence and importance.

In other words, we became, by the battle of Manila Bay and the occupation of the Philippine Islands, the first power of the Pacific, for the control of which we seem to be destined by the great influences which shape the politics of the world and develop nations for mighty responsibilities. If we bravely perform our duty in the Philippines, establish peace and order, give the people a large degree of autonomy, spread the influence of our free institutions and hold there a position of commercial and strategic advantage for the advancement and protection of our vast growing interests in the Pacific and far East, we shall be forever the first power of the Pacific and of all the world. If we are laggards now, we shall be laggards until doomsday. If the war and occupation of the islands costs us hundreds of millions of dollars now, another war, which would inevitably come in the future if we should try to regain the position lost by withdrawing from the islands and to lead in the merciless race of nations for material and moral supremacy, would cost us ten times as many million dollars.

THE use of the North Sea and Baltic Canal by ocean-going vessels is slowly but steadily increasing. The entries during the month of October numbered 2,669, with an aggregate tonnage of 385,176, as compared with 2,436, with a total tonnage of 330,843, in October, 1898.

THE CAPE NOME GOLD DISTRICT

By F. C. SCHRADER,

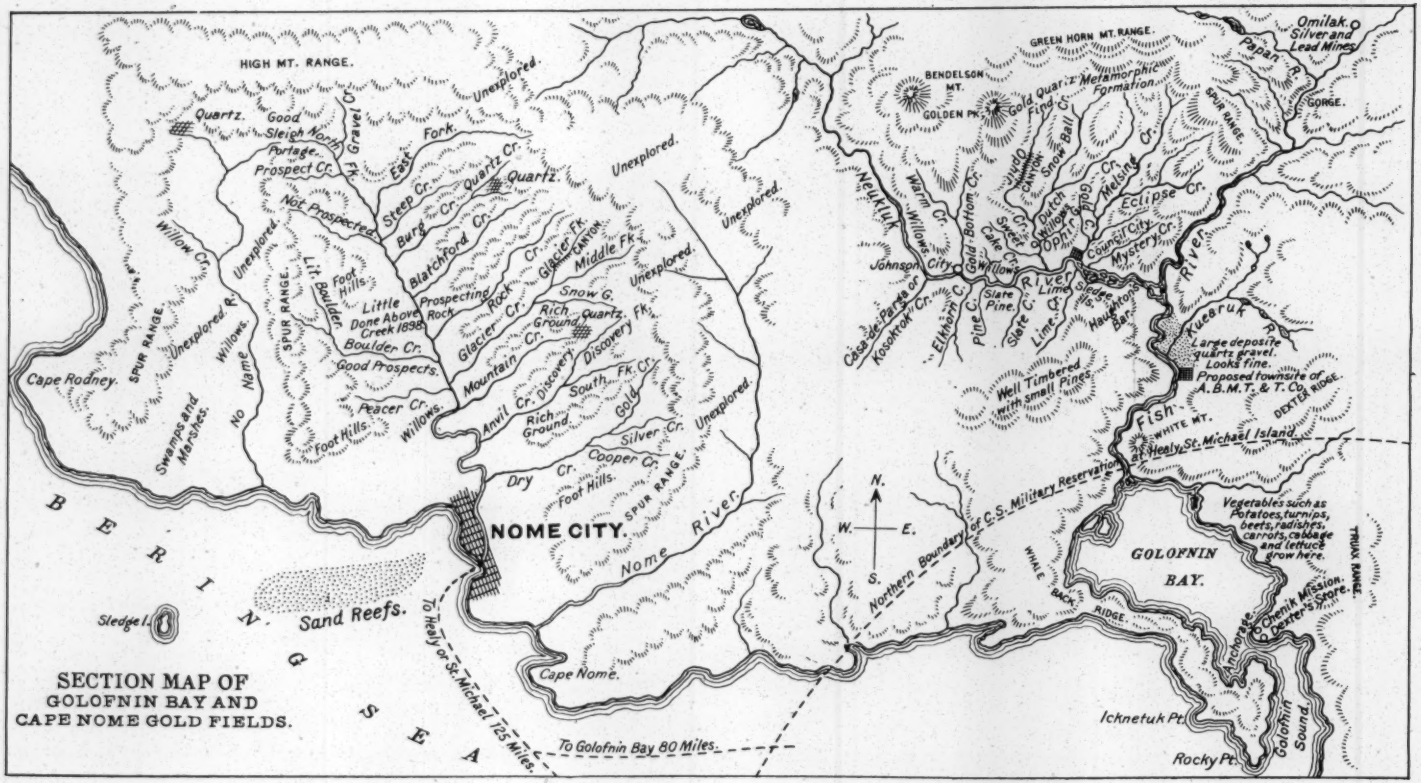
United States Geological Survey

On arriving at St Michael late in September, 1899, at the close of the field season's work in the Yukon country, we found that ocean transportation from St Michael to Seattle could not be obtained before about October 10, when the N. A. T. & T. Company's steamship *Roanoke* would sail. The interim of a couple of weeks' waiting was accordingly improved by repairing to Nome for the purpose of collecting such geologic and topographic data of this new district as time, circumstances, and climate would permit.

As our boats, tents, and camping outfits had been left in the Yukon country, our party was dependent for such accommodations at Nome or from the miners on the creeks and in the gulches. The topography was in charge of Messrs T. G. Gerdine and D. C. Witherspoon, while the geology and topography were done by Messrs Brooks and Schrader. The latter, with knapsacks of sleeping bags and provisions, made a several days' trip into the mountains and gulches to examine the formations and gold diggings. On account of the snow, cold weather, and freezing up of the creeks, most of the gold claims had been closed down early in October and the operators had departed. Wherever the miners were found to be still present, however, their hospitality was generously extended, notably by Mr F. P. King, members of the Pioneer Company, and other miners on Anvil Creek.

The Cape Nome district is situated on the northwest coast of Alaska, on the northeast arm of Bering Sea, at the entrance of Norton Sound. It is the southern promontory of a large peninsula, extending westward toward Siberia between Kotzebue and Norton Sounds, and largely separates Bering Sea from the Arctic Ocean. Westward this peninsula terminates at the 168th meridian in Cape Prince of Wales, the most westward extension of the American continent, which is here separated from Asia by Bering Strait, about 60 miles in width.

The promontory on which the Nome district occurs has long been known on nearly all Alaskan maps by the name of Cape Nome. The district lies about 100 miles northwest of St Michael, and just outside


HIGH MT. RANGE.
Unexplored.
Quartz.
Good Sleigh Portage.
North Fk.
Prospect Cr.
Not Prospected.
Unexplored.
Willow Cr.
SPUR RANGE.
Unexplored R.
Willows.
Cape Rodney.
Swamps and Marshes.
NO Name
Lit. Boulder
Foot Hills.
Little Dome Above Creek 1898
Boulder Cr.
Good Prospects.
Peacer Cr.
Willows.
Foot Hills.
Steep Cr.
East Fork.
Quartz Cr.
Quartz.
Burg Cr.
Blatchford Cr.
Prospecting Rock
Glacier Cr.
Glacier Fk.
CANYON
Middle Fk.
Snow G.
Rich Ground
Quartz.
Mountain Cr.
Discovery
Discovery Fk.
Anvil Cr.
South Fk. Cr.
Gold
Rich Ground
Silver Cr.
Cooper Cr.
Dry Cr.
Foot Hills.
SPUR RANGE.
Unexplored.
Unexplored.
Unexplored.
Unexplored.
Unexplored.
NOME CITY.
Nome River
B E R I N G S E A
Sledge I.
Sand Reefs.
Cape Nome.
To Healy or St. Michael 125 Miles.
To Golofnin Bay 80 Miles.
SECTION MAP OF
GOLOFNIN BAY AND
CAPE NOME GOLD FIELDS.
GREEN HORN MT. RANGE.
Omilak. Silver and Lead Mines
Papan R.
GORGE.
SPUR RANGE.
BENDELSON MT.
GOLDEN PK.
Gold Quartz Metamorphic Formation.
Gold Fine
Snow Ball Cr.
Gold Canyon
Dutch Cr.
Willow Cr.
Ophir Cr.
Melsing Cr.
Eclipse Cr.
Council City
Mystery Cr.
Newkluk
Warm Cr.
Willows
Gold Bottom Cr.
Johnson City
Cape Nome
Sweet Cr.
Cake Cr.
Willow
River
Slate Pine.
Slate Cr.
Lime Cr.
Sledge
Haulover Bar.
Casa de Perro of Kosohtoh Cr.
Elkhorn C.
Pine C.
Kuerak R.
Large deposite quartz gravel. Looks fine.
Proposed townsite of A.B.M.T. & T. Co.
Well Timbered with small Pines
DEXTER RIDGE
WHITE MT.
Fish
at Healy St. Michael Island
Northern Boundary of U.S. Military Reservation
N.
W.
E.
S.
GOLOFNIN BAY.
Vegetables such as Potatoes, turnips, beets, radishes, carrots, cabbage and lettuce grow here.
TRUAX RANGE.
WHALE BACK RIDGE.
Anchorage.
Chenik Mission.
Dexter's Store.
Golofnin Sound.
Icknetuk Pt.
Rocky Pt.

of the Fort St Michael Military Reservation. By ocean steamer route it is nearly 2,700 miles northwest of Seattle, and about 750 miles from Dutch Harbor, Unalaska. The Cape Nome region as known at present extends from Cape Nome, the apex of the promontory, some 30 miles or more northwestward along the coast and about 20 miles inland to the north. In the middle of this shore line, at the mouth of the Snake River, the thriving city of Nome is situated.

PART OF NOME FROM THE BEACH — LOOKING NORTHWEST

From Cape Nome for 30 or more miles westward to near Synrock the shore line is comparatively straight and smooth, but lying back of the shore line, between it and the base of the mountains, occurs the well-known tundra. This consists of a strip of treeless, moss-covered marine gravels, forming a coastal shelf, which along the beach is about 30 feet above sea-level. From here it slopes gently upward until at the base of the mountains, some four or five miles from the beach, it attains an elevation of 150 or 200 feet. During the summer it is usually wet, soft, and boggy and is dotted here and there by a few

ponds, and is traversed by the Snake, Nome, and Cripple rivers and other smaller streams which carry out the drainage from the mountains.

Along the north edge of the tundra, at the beginning of the mountains, the topography is low and rounding, with the floors of the main valleys rather flat and from one to three miles in width. Seven miles north of Nome, crude gravel terraces, seemingly marine, were observed to the height of about 1,500 feet. These seem to mark successive stages of land elevation still going on.

Further northward, 20 or 30 miles from the beach, the mountains become more rugged and rise, in some instances, into seemingly permanent snow-peaks, but probably nowhere exceed 3,000 feet in elevation.

The nearest harbors for deep-sea or ocean vessels are Port Clarence, 60 miles northwest of Nome, and Golofnin Bay, the same distance northeast. It is not unlikely that one or both of these harbors will be connected with the Nome district by rail should the district prove as rich as present prospects indicate. Port Safety, a small harbor to the east of Cape Nome, will admit vessels not drawing over eight feet of water, but is not adequate for the accommodation of deep-sea-going vessels. In front of Nome the sea is so shallow that the larger vessels cannot approach the shore, but are obliged to discharge their cargoes by means of boats and lighters, a method which is very precarious on account of the combers and breakers that usually sweep the coast.

The mountains thus far examined are composed of mica-schists and limestone, alternating in layers and beds with each other. They are thin or medium bedded rocks, and strike and trend northeastward and southwestward and dip southeastward at an angle of about 45°. The limestone is bluish gray and comparatively fine grained and more or less well metamorphosed, often becoming a crystalline marble. The mica-schist is sometimes slaty, but it also shows considerable metamorphic action and is garnetiferous. Locally the rocks are sometimes folded and traversed by quartz veins, and veinlets, of both quartz and calcite, with also some iron and copper pyrites. Pyrites are also disseminated sporadically in the schists. The quartz veins and veinlets traversing the rocks are supposed to be the source of the gold. Far back in the mountains granite is said to occur, but may be represented merely by granitoid dikes, some pebbles of which occur in the beach gravels.

The tundra is composed of apparently marine gravels, derived from the rocks in the mountains, and is almost exclusively mica-

schist and limestone. Toward the mountains the gravels are often coarse, carrying boulders of considerable size, but along the beach they have been largely reduced to fine gravel and sand by wave action. It is in this reduced material that the beach gold occurs.

The first discovery of gold in the Nome district was made in September, 1898, when a party of Swedes found it on the creeks and in the gulches; but not until July, 1899, was the discovery of the beach gold made. In the gulches along the edge of the mountains the diggings

BEACH, TUNDRA, AND HILLS — LOOKING NORTHEAST FROM NOME

are coarse gold, the largest nuggets found being about $350 each. Here the gold occurs on the "bed rock" under the creek gravels, which are six or eight feet in thickness.

Along the beach the gold is quite fine, having been reduced by wave action along with the gravel and sand to the size of bird-shot, or even finer. Its occurrence here is for the most part under two or three feet of gravel and sand, on a bottom layer of clay or argillaceous sand, called "bed rock" by the miners. Thin layers of ruby sand interstratified along with the gravel, near the so-called "bed rock," are also

often found to be richly auriferous. Beach diggings have been operated during the past summer and fall for about thirty or more miles, from Cape Nome to near Synrock. Coarse gold is being mined in Anvil, Glacier, Dexter, and Osborne creeks, and along Penny and Cripple rivers. The production of the region for the past season of 1899, as near as can be estimated, amounted to $2,000,000, of which one-half has been produced by the beach. Discovery claim and one below on Anvil Creek produced $225,000, while Snow Gulch, a very

SNAKE RIVER AND NOME, FROM TUNDRA ABOUT ONE MILE WEST OF NOME

small tributary of Glacier Creek, is reported to have yielded over $200,000.

In the gulches the work is carried on by stripping, sluicing, and to some extent by rocking, while on the beach the method of extracting the gold has thus far been almost exclusively by rocking. Here the water used for rocking is generally that of the ocean. In a few cases, however, the sea water has been raised by steam power and sluices constructed along the beach. In the rocker the gold is caught on blankets and to some extent on copper plates coated with mercury.

In many instances, where the supply of copper plate could not equal the demand, the bottom of the rocker was covered by United States silver coin, principally one-dollar pieces, and these coated with the mercury which caught the gold. During the latter part of summer and in the fall it is estimated that an average of 2,000 men were working along the beach, and that they took out an average of about $20 per day per man. In many cases the amount taken out was much greater. The tundra between the beach and the base of the mountains has also been prospected to some extent and has not infrequently yielded from 10 cents to 30 cents per pan. Capital, however, will doubtless be required to handle the tundra with profit; also the benches above referred to in the lower region of the mountains have been found to be auriferous and have largely been staked.

The country about the head of Solomon and Bonanza rivers, 40 miles northwest of Nome, reports good prospects. In the Golofnin Bay country on Fish River and its tributaries coarse gold was taken out during the past summer. On Ophir Creek, one of the chief tributaries, a single claim is said to have yielded $75,000. Prospects have also been reported on the western shore of Norton Bay. Late in the fall it was rumored that gold had been found at Cape York by a native employed in herding the Government reindeer. These rumors have since been more than verified by Captain Jarvis, who visited this region with the U. S. revenue cutter *Bear*, and by a recent number of *The Alaskan Miner*, issued at Juneau, which reports the country rich and that more than nine square miles of it were staked late in November and early in December. There seems good reason to infer that substantially the entire southern half of this large peninsula, covering more than 8,000 or 10,000 square miles, is gold-bearing and much of it very rich. It lies in the great Yukon gold belt, extending from the Klondike westward, and probably continues across Bering Sea into Siberia. It seems more than probable that the Siberian coast will be visited by enterprising American prospectors before another season has passed.

There is no timber in the Nome district. The nearest approach to it is a scanty growth of very stunted willow or elm along some of the waterways, wholly inadequate for ordinary camping purposes. A growth of moss, which furnishes abundance of food for reindeer, covers the surface except in the upper slopes of the mountains. There is, however, a sufficient growth of grass to sustain horses and cattle during the short summer months. Mr F. V. Coville attributes the absence of timber to the rigors of the Arctic climate.

Prior to the discovery of gold there were a few natives, all Eskimo, scattered along the coast from near Cape Nome northward, and a small village on Sledge Island during the seal-fishing season. At Port Clarence, which has been the headquarters of the United States reindeer industry in Alaska, is a mission with good schools.

The great movement of the white population toward Nome began early in the summer of 1899 and continued until the middle of October, building up a city of over 5,000 people on a previously barren beach. Nearly every boat which descended the Yukon from Dawson and other points on the river was loaded to its fullest capacity with passengers, while many came from the southeastern districts of Alaska and the Pacific coast of the United States. The rapidity in growth of the city of Nome has probably never been precedented, especially in so remote a region. A thousand or more unsuccessful prospectors descending from the Koyukuk district and an equal number from the Kotzebue Sound and Kowak River district arrived at St Michael in a financially stranded condition; but hearing of the diggings of Nome a majority soon found their way thither, and in a few days' work on the beach had rocked out sufficient gold to place themselves in moderately comfortable circumstances and pay their transportation back to the United States.

The principal trading companies operating at Nome are the N. A. T. & T. Company, the A. C. Company, and the A. E. or Alaska Exploration Company, all with fairly well-stocked warehouses and plants and abundant supplies for next spring. Of newspapers there are at the present time the *Nome News*, *The Nome Gold Digger*, and *The Nome Herald*. *The Nugget*, with printing press and equipments from Dawson, went down in a gale on Norton Sound in September, while a similar outfit bound for Nome from the United States went down on the *Laurado* at St Lawrence Island a few weeks later. A company is now being organized with a view to constructing a deep-water pier for a temporary harbor, to be extended far out into the ocean, whereby deep-sea vessels may be unloaded. Until more definite arrangements can be perfected the United States Post-Office is endeavoring to send the mails to Nome semi-monthly during the present winter by way of White Pass, Yukon River, and the Unilaklik and St Michael route. On account of ice in Bering Sea, Nome cannot be reached by ocean vessels earlier than some time in June, though the Nome coast is free from ice later in the fall and earlier in the summer than the coast about St Michael.

The climate of Cape Nome is mild and for the most part moist or rainy during the summer, but cold and severe in the winter season, which extends from late in October to May. The climate, however, is healthful. During the past summer the only difficulty the population of Nome seemed to encounter was typhoid fever, and this it seems likely would not have occurred with a good drainage system and a wholesome water supply, which may be readily obtained with a little care and labor. Several hospitals were organized and equipped and all did excellent service to their fullest capacity. Other patients were shipped down to the United States in nearly every returning vessel during the latter part of the season.

There are probably about 3,000 people wintering at Nome today, and judging from the present indications it is not unlikely that next summer the population will amount to about 25,000 or 30,000. Living during the past months has been very high—board and lodging, $6 per day, and with room $10 per day. The price of an ordinary meal was from $2 to $3, while wages ranged from $12 to $15 per day. Wood gathered from the drift wood along the beach cost $40 to $50 a cord; coal, $125 per ton, and lumber $125 per thousand feet, and other necessaries almost in proportion.

The population, though considerably mixed, is preëminently American and contains a good business element and law-abiding people. The government is a self-organized municipal government, giving good order throughout. A police force is on duty and there is also located here a detachment of United States soldiers under Lieutenant Creigie, who did much in the earlier stages of Nome toward the preservation of order and the securing of individual rights.

THE IDAHO AND MONTANA BOUNDARY LINE

By Richard U. Goode,

United States Geological Survey

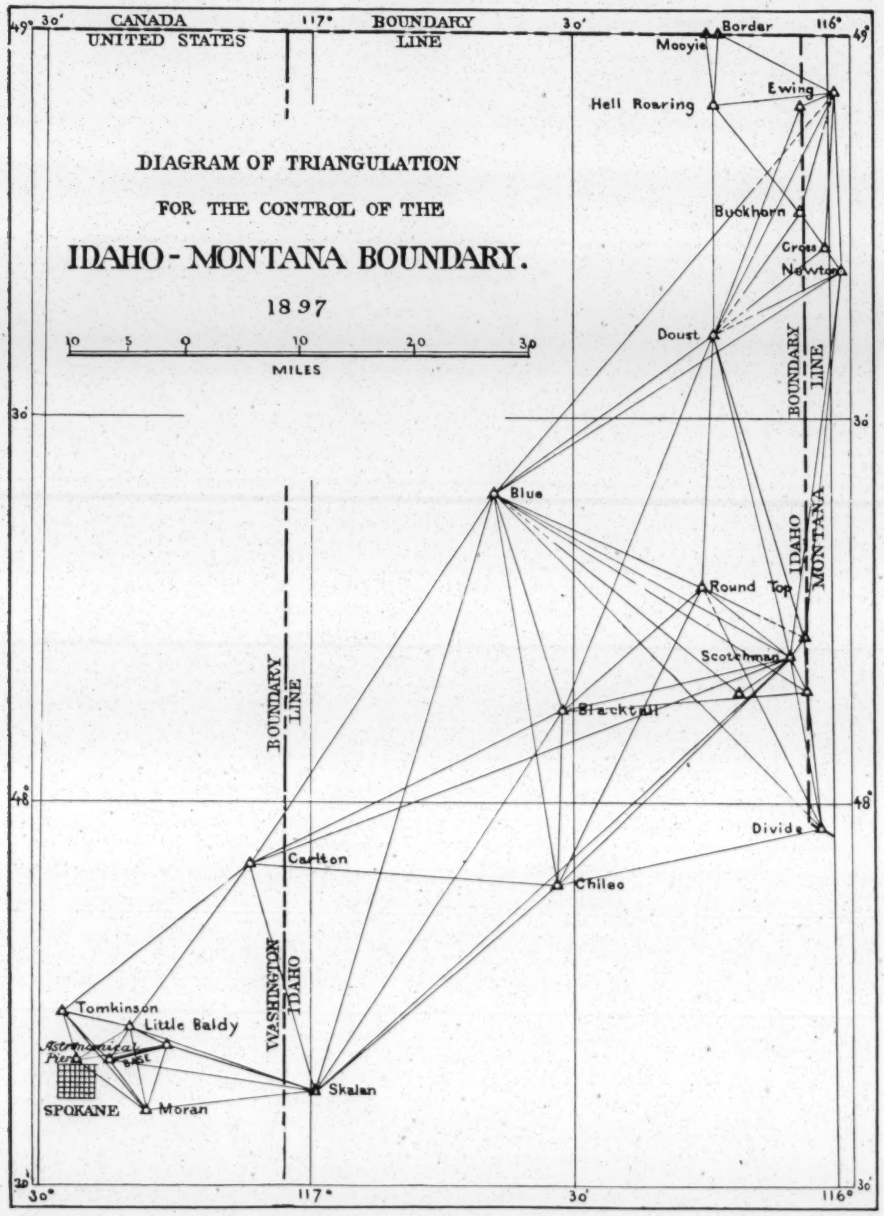
The United States Geological Survey has completed the survey and marking of the portion of the boundary line between Idaho and Montana corresponding to the 39th meridian west from Washington, or 116° 03′ 02.30″ west from Greenwich. The remaining portion of the boundary line follows the crest of the Bitter Root and Rocky Mountains, and as this crest is for the most part sharp and well-defined

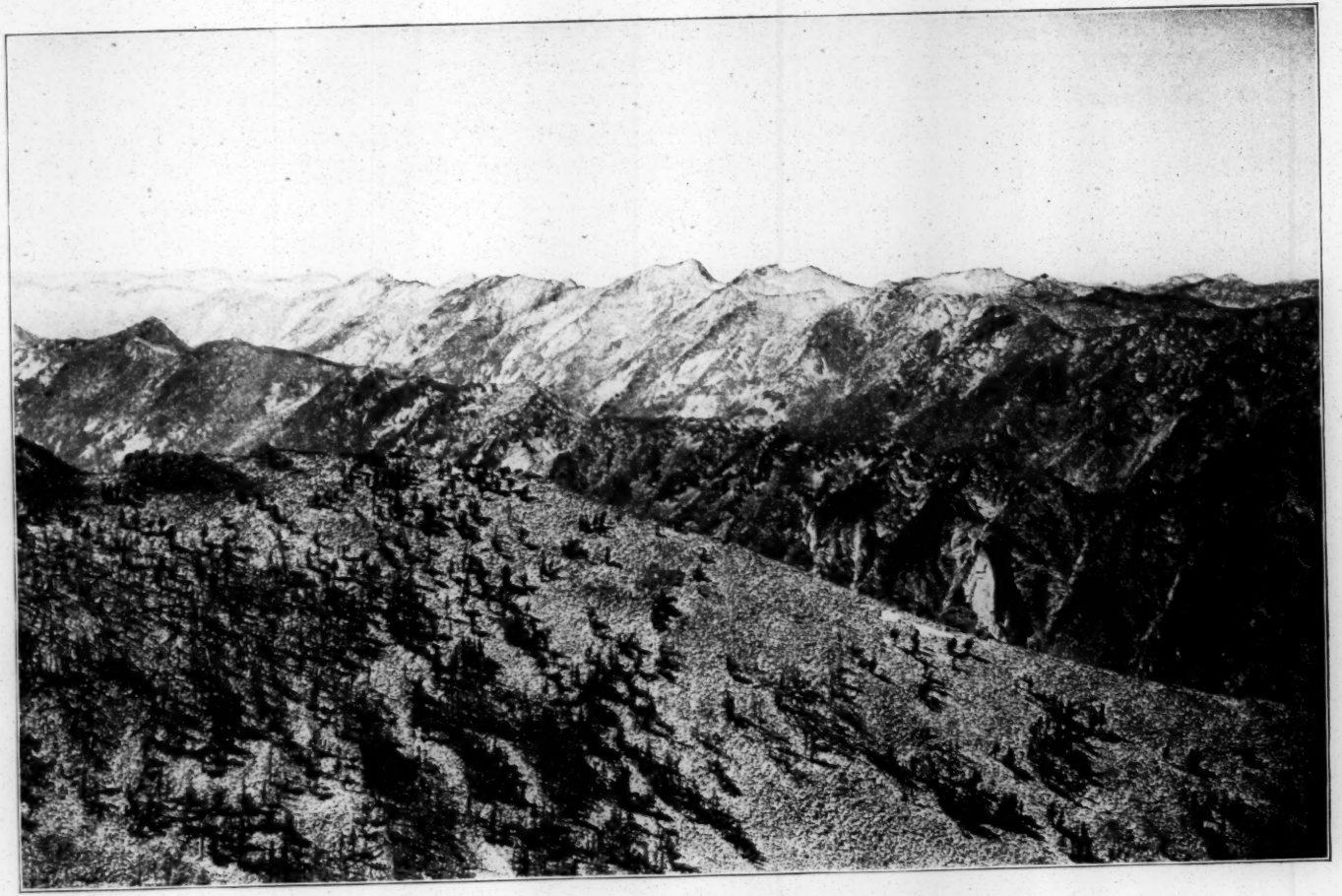
(see illustration, page 26), it was not considered necessary to place monuments along this portion of the line, nor would it have been possible to do so under the appropriation, as the available funds were exhausted on the part of the line first mentioned. From a geological standpoint, but hardly from a practical one, however, there is another reason why monuments should not be placed on the summit of the Bitter Root Range * as marking the boundary line between Idaho and Montana. There is abundant evidence that the summit is what is known as a retreating or migrating divide; in other words, the waters tributary to the Bitter Root River in Montana are continually capturing by erosion those of the Clearwater River in Idaho, so that the divide is slowly being shifted to the westward, thus adding to the territory of Montana and diminishing that of Idaho. The existing divide is uniformly from six to eight miles from the irregular line representing the original divide, if the latter may be accepted as having passed through the highest points of the range, which seems probable.

Points near the meridian line were located by triangulation from the Spokane base of the U. S. Geological Survey, this base being referred for its initial latitude and longitude to two astronomic piers in the court-house grounds at Spokane, the latitude determination having been made by the U. S. Geological Survey and the longitude determination by the U. S. Coast and Geodetic Survey.

After the point on the crest of the Bitter Root Mountains corresponding to its intersection with the 39th meridian had been located, this location having been determined by traverse from the triangulation station divide (see diagram of triangulation on page 25), a random line was run northward to the international boundary by transit and stadia, horizontal and vertical distances being measured. Direction was controlled by frequent observations for azimuth. The line was further checked in azimuth, as well as in distance, by connection with the triangulation at four points. It was not practicable to establish a triangulation station near the line at its intersection with the international boundary, so from the most northerly location by triangu-

* There has been considerable discussion as to just what constitutes the Bitter Root Range. The law defining the boundary line between Idaho and Montana implies that the range extends at least from Lake Pend d'Oreille to the Continental Divide, and it seems to the writer, as well as to others interested, that this designation should stand. There are, however, topographic and geologic considerations which make it desirable to differentiate somewhat, and it is proposed that the Bitter Root Range be subdesignated as follows: The Cœur d'Alène Mountains, extending from the vicinity of Lake Pend d'Oreille to St Regis Pass; the St Regis Mountains, extending from St Regis Pass to Lolo Pass; the Lolo Mountains, extending from Lolo Pass to Nez Perces Pass, and the Nez Perces Mountains, extending from Nez Perces Pass to the Continental Divide.


CANADA
UNITED STATES
BOUNDARY LINE
DIAGRAM OF TRIANGULATION
FOR THE CONTROL OF THE
IDAHO - MONTANA BOUNDARY.
1897
10 5 0 10 20 30
MILES
Border
Mooyie
Hell Roaring
Ewing
Buckhorn
Cross
Newton
Doust
Blue
Round Top
Scotchman
Blacktail
Divide
Carlton
Chileo
Tomkinson
Little Baldy
Astronomical Point
Skalan
Moran
SPOKANE
BOUNDARY LINE
IDAHO
MONTANA
WASHINGTON
IDAHO
49°
48°
30'
117°
116°



SUMMIT OF BITTER ROOT RANGE LOOKING NORTH FROM WARD PEAK

The crest of the Range is the boundary line between Idaho and Montana

lation the distance to this point of intersection was measured with a steel tape and was also checked by stadia.

It may be noted that no monuments were found marking the international boundary near the point of its intersection with the Idaho-Montana boundary line, and it is believed that there are large sections of this important line which are not marked and have never been marked in any way. Considerable work was done by the Northwestern Boundary Survey, but just how far this work proceeded is not known. The State Department, in answer to an inquiry on the subject, makes the statement that "The department has no report of the western portion of the Northwestern Boundary Survey from the Pacific Coast to the summit of the Rocky Mountains." It is suggested that under these circumstances a commission similar to the one which recently served in connection with the survey and remarking of the boundary line between the United States and Mexico west of the Rio Grande might be appropriately appointed. There was found, however, among the records of the Northwestern Boundary Survey, in the manuscript-room of the State Department, a list of positions determined, and in this list was given the position of the Mooyie Trail monument, as follows: Latitude, 49° 00′ 01.3″; longitude, 116° 14′ 59.2″. This monument was identified on the ground about eight and one-half miles west of the Idaho-Montana boundary line, and its position determined by triangulation with reference to the Spokane base and astronomic position as follows: Latitude, 49° 00′ 01.51″; longitude, 116° 14′ 19.48″. The check in latitude, 21 feet, was considered very satisfactory, and even the discrepancy in longitude, about 2,647 feet, was not more than might be expected, considering the lack of telegraphic facilities by the Northwestern Boundary Survey.

The point determined as the true one for the intersection of the international boundary and the Idaho-Montana boundary was located with reference to the latitude of the Mooyie monument, so that there may be no discrepancy when the international boundary is ultimately traced and marked, it being assumed that the work already done by the Northwestern Boundary Survey will be accepted and utilized. The random line northward having been run, as previously stated, and the adjustments having been made connecting the line with the triangulation, the true line was then established from north to south and the monuments were placed.

The line going northward starts at an elevation of about 4,850 feet and, descending from the summit of the Bitter Root Mountains, crosses

the Clark Fork of the Columbia at an altitude of about 2,220 feet, then climbs to the summit of the Cabinet Mountains, reaching at this point an elevation of 6,670 feet. Continuing from this locality, it intersects many canyons tributary to the Kootenai River and crosses the latter, touching the platform of the station-house at Leonia, a station on the Great Northern Railroad, at an elevation of 1,824 feet; thence it ascends another high ridge, the Yak Mountain, reaching an altitude of 6,585 feet, whence there is a gradual descent, crossing, however, many lateral streams to the international boundary, at which point the elevation is about 4,500 feet. The country traversed is extensively trenched with canyons of considerable depth, and the sides of the mountains are in many places very precipitous. The profile shows a total rise and fall of about 63,000 feet. The line is for the most part through a heavily timbered country, and there are few roads or trails, so that the question of transportation was a rather difficult one. The length of the line surveyed passes through a latitudinal interval of 1° 1′ 24.65″, or about 70½ miles.

Previous to the work herein referred to, no attempt had ever been made to locate and mark the Idaho-Montana boundary line, but the Northern Pacific and Great Northern Railways had estimated the points at which it crossed their line and established marks according to this estimation. The accepted crossing on the Northern Pacific was found to be about one-quarter of a mile west of the true line, and that of the Great Northern about one mile east of the true line, along the railway line, but only about one-half mile east thereof in direct longitude. Kootenai County, Idaho, spent a considerable sum of money in grading a road up the mountain from Leonia toward Sylvanite, which, when the boundary line was located soon after, was found to be in Flathead County, Montana.

The monuments used along the meridional portion of the line are of two kinds, stone and iron. The stone monuments are of granite, six feet in length and ten inches square, undressed, except for spaces sufficient to permit of the cutting of the words "Idaho" and "Montana" on opposite sides. These monuments are placed in the more prominent localities and are monolithic in all cases when it was possible to transport them in one mass to the proper position; otherwise they were cut in ten sections, so that they could be carried on pack mules, and were bolted and cemented together when established in place. The monuments at the international boundary and at the summit of the Bitter Root Mountains (these being the terminal points

of the meridional portion of the line) are of stone made from sections as described, and monoliths are placed near the points at which the boundary line crosses the Northern Pacific and Great Northern Railways. The iron monuments are hollow posts of wrought iron, six feet in length and about four inches in outer diameter, covered with a coat of asphaltum tar. They were flared at the bottom to a width of 12 inches, so that they might be more securely planted in the ground. These posts are set to a depth of three feet below the surface of the ground, three feet remaining above ground, and a conical mound of earth is raised around them to a height of two feet. On the tops of the posts are riveted bronze caps, on which is cast appropriate lettering, and the number of the monument and the distance from the international boundary in miles are stamped in large figures. In addition to the four stone monuments referred to above, 89 iron monuments were placed. The sites for the monuments were chosen with reference to the topographic features of the country instead of being placed at even miles, as has usually been the custom on boundary lines, but there are no intervals greater than a mile between monuments. They were placed generally on summits or near streams, roads, or trails. Between the monuments the line is thoroughly cut out and adjacent trees are blazed, so that the line can be readily recognized in any locality.

THE COPPER RIVER DELTA

The entrance to the Copper River has become, within the past few years, a region of great interest and importance, and in order to develop its geography a Coast and Geodetic Survey party has been sent there for the past two seasons. Landing in the vicinity of Orca, Mr H. P. Ritter, under whose direction the operations were conducted, immediately began a triangulation of the surrounding country. His party consisted of Mr E. B. Latham and Mr H. C. Denson, both of the Coast and Geodetic Survey, with a foreman and eight hands. The following information has been taken from the reports of Messrs Ritter and Denson, which have just reached Washington.

Astronomical observations were made at several points, notably at Orca and at Kokinhenic. The work comprised a survey of the delta and its vicinity, roughly embracing about 1,000 square miles. The triangulation, of which the base was in the vicinity of Kokinhenic

astronomical station, covers the entire delta, and many observations were taken on the mountains lying to the east, north, and west. This work served to locate their position and determine their heights.

Hydrographic examinations were made at the mouth of the river and at other places. The plane-table work covered the shore-line, positions of sloughs, reefs, etc., and the tidal observations were used in reducing the hydrographic work. Meteorological observations were also made, as well as magnetic observations, at Orca and at a point in the middle of the delta. A large part of the topography was executed by application of the photo-topographic method. A map on a scale of 1 : 80000 was prepared from the results of the season's work.

The longitude depends on the transportation of chronometers, determining a sea rate from observations at San Francisco and Seattle and a land rate after having carried the chronometer ashore and made sufficient observations for this purpose.

Tidal observations were carried on at all stations occupied by the party, namely, Orca, Kokinhenic, Pete Dahl Slough, and Eyak River. These observations were made in such a way that the series for consecutive stations overlap, thus fixing the relation between the tides at the two stations.

At both Orca and Kokinhenic magnetic observations were made—at the former place in May and at the latter in June.

The photo-topographic camera was continually used, and the necessary developing accessories were carried along, so that the negatives were largely developed in the field. Owing to the general unfavorableness of the weather, no systematic scheme could be carried out, although a large amount of valuable data was obtained. One hundred and eighty views were taken with the topographic camera and 88 with an ordinary view camera.

The country in the vicinity of the mouth of the Copper River, as seen when approaching it from the sea, has the appearance of a vast snow-peaked mountain range whose tops are covered with perpetual snow. Innumerable glaciers move down the mountain sides and fill the deeply cut canyons. From the head of the delta to the ocean reef is a distance of about 25 miles. The delta is 50 miles wide, and the mountains range from 1,000 to 8,000 feet in elevation. The flats at the mouth of the river are cut up into numerous islands by the many tidal sloughs and small streams flowing from the glaciers. Many interesting features may be noted in regard to this particular locality, among which may be mentioned the violent winds, which begin dur-

ing the month of September and last through the winter until early spring. They are of such violence that it is impossible for any one to cross the delta while they prevail.

The body of water intervening between the flats and the ocean reefs is navigable to boats drawing from three to four feet of water, and is in places navigable to these only at high tide. By the receding tide an area of about 250 square miles is completely drained, and the surface presents one unbroken expanse of mud. The currents during the rising tide are extremely swift, as the ocean reef acts as a barrier until the water rises over it, when it flows in with great rapidity. The average temperature of the delta during the months of June, July, and August was found to be about 50° F. During the month of September it is 10° less, accompanied by freezing weather during the nights. The vegetation is very marked. On the flats are found flowers and marsh grass; on the sand dunes are alders, berry bushes, and cottonwood trees, while on the mountain side hemlock and firs grow in abundance.

From the head of the delta to where the river leaves the marsh and spreads out over the mud flats it flows nearly south, is about five miles wide, and consists of numerous changeable channels, varying in depth from five to twenty feet. The river breaks through the mountain range about 30 miles from the coast, and is here flanked on the east side by Miles Glacier and on the west by Childs Glacier. In this vicinity are the rapids, which form an insurmountable barrier to all kinds of upstream navigation except canoes.

The most westerly branch of the delta is known as the Alaganik Slough, being the most extensively traveled and important branch of the river. Its length is about 15 miles, and it varies in width from one half mile to one mile, with depths from five to fifteen feet, depending on the stage of the tide. This branch is a tidal stream. The average tide at the lower end during the stay of Mr Ritter's party was about ten feet, while at Alaganik, at the upper end, the tide was from two to three feet. The navigation of this branch is facilitated by the fact that during flood-tide the direction of the current is east, while at ebb-tide it is west. This effect is felt as far as Alaganik.

On the Copper River delta are two large canneries, one at Orca and the other at Odiak. The fishing season begins about May and ends with July. During this time each cannery turns out about 30,000 cases.

E. D. PRESTON.

OUR NEW POSSESSIONS AND THE INTEREST THEY ARE EXCITING

The intense interest which is felt throughout the United States regarding the islands which the events of the past year have brought into closer relations with us is indicated in many ways, but especially in the large number of inquiries which are being received by the various departments of the government for information along these lines. Two editions of the monograph, "Cuba, Puerto Rico, the Hawaiian, Philippine, and Samoan Islands," issued by the Bureau of Statistics of the Treasury Department, have been entirely exhausted, and a third edition, containing much additional information received from government officials in those islands, as well as from other sources, has just been issued and the statistics of their commerce brought down to the latest possible date. The study of this latest information regarding these islands leads the Bureau of Statistics to the conclusion that their present consuming power is, in round terms, one hundred million dollars—about equally divided between agricultural products and manufactures, but that this can and will be greatly increased by the introduction of modern methods of production and by the creation of roads and railways by which the uncultivated area can be opened, consuming power being dependent upon producing power. Only about two millions of the thirty-five million acres composing the Island of Cuba have, it is estimated, ever been under cultivation, and a considerable percentage of this is now uncultivated, owing to the devastation of the recent wars. In Puerto Rico, while there is already a dense population, the productive capacity of the island can, it is believed, be greatly increased by the construction of railways and roads in the interior of the island, which has now few wagon roads at any distance from the coast capable of use for transporting agricultural products. In the Philippine Islands conditions are quite similar, and the introduction of railways and wagon roads would enable the cultivation of large areas of extremely productive land, which have not up to this time been brought under cultivation. In the Hawaiian Islands a considerable increase is being made in the productive area by irrigation from artesian wells. In the Samoan Islands, which are also discussed, the cultivable area is comparatively small, and especially so in the single island of Tutuila, which falls to the United

States under the new treaty between Great Britain, Germany, and the United States, the chief value of this island being its harbor, which is undoubtedly the finest island harbor in the South Pacific and perhaps of the entire Pacific Ocean.

All the products of these islands are of a class which the United States is constantly required to import in great quantities. The annual importation of tropical products into the United States averages fully $250,000,000 in value, and as this large importation is composed chiefly of sugar, coffee, fruits and nuts, fibers, spices, drugs, dye and cabinet woods, and other tropical growths, all of which can be produced and are now being produced, in greater or less quantities, in these islands, it seems probable that their new relations with the United States may lead to the expenditure in them of most of the money which our people are compelled to send abroad for tropical products, and that in return we shall furnish them the increased supplies of foodstuffs and manufactures which their increased earnings will lead them to demand.

O. P. AUSTIN.

THE TOTAL ECLIPSE OF THE SUN, MAY 28, 1900

The path of the shadow of the approaching total eclipse of the sun, May 28, 1900, begins at sunrise over the Pacific Ocean, just to the west of Mexico, extends thence northeastward over the Southern States from New Orleans, La., to Norfolk, Va., crosses the middle portions of the North Atlantic Ocean to Portugal, and terminates near the northern end of the Red Sea at sunset. The location of this track in the United States is remarkable for its convenient accessibility to a multitude of people, who with a minimum of trouble can easily view the wonderful phenomenon of the solar corona. The track passes over New Orleans, La., centrally, touches Mobile, Ala., on the southern and Montgomery, Ala., on the northern edge, passes just to the north of Columbus, Macon, Milledgeville, and Augusta, Ga., a few miles south of Atlanta, Ga., a little north of Columbia, S. C., just south of Charlotte, N. C., and quite centrally over Raleigh, N. C., and Norfolk, Va. It is easily computed that more than half a million persons will see the total eclipse, of more or less duration, from their homes, and it is not unlikely that many more will take advantage of the opportunity to see the event of a lifetime. Educators ought to encourage their students to go to the track at some point of it, and thus arouse in them a prac-

tical interest in solar physics; transportation companies should find an opportunity, quite equal to an exposition, a yacht race, or a grand parade, of enticing many to make such an excursion. The fact that the track, instead of falling on the inaccessible places of the earth, is so near to suitable hotel accommodations will make the event one of unusual popularity in the United States.

The U. S. Weather Bureau has been conducting a cloud survey of the region near the track during the seasons of 1897, 1898, and 1899, with the object of determining the localities which have the least tendency to cloudiness at that time of the year. The result is that near the Atlantic Coast and extending back into North Carolina the prevailing cloudiness at the morning hour of the eclipse, 8 a. m. to 9 a. m., is about 40 per cent. In the states of Georgia and Alabama the percentage falls to less than 20 per cent. Near the Gulf of Mexico, in Mississippi and Louisiana, it rises again to more than 30 per cent. Hence it follows that the chances for fair weather are about twice as good in Georgia and Alabama—that is, on the highland of the southern end of the Appalachian system—as near the coast in either direction. Unfortunately the duration of the totality on the central line increases from 1 minute 13 seconds near New Orleans, La., to 1 minute 42 seconds near Norfolk, Va., so that astronomers would naturally select stations as near the Atlantic Coast as possible, in order to secure the longest look at the corona. Since the probability of cloudiness is a maximum at the very part of the track where the duration of the eclipse is greatest, there must be some balancing of chances in selecting the sites of the observing stations.

F. H. Bigelow.

THE CENSUS OF 1900

By Dr F. H. Wines,

Assistant Director of the Census

The census impresses the imagination of the American people as something vast and mysterious simply because of the magnitude of the numbers with which it deals and the extent of territory which it covers. The elements that go to make up a census are very few and very simple. The whole subject divides itself into two parts, collection of data and handling of data collected.

The census act prescribes what inquiries shall be undertaken and, in large part, what questions shall be asked. These questions are asked of every individual, of every owner of a farm, and of every manufacturer in the United States, all of whom are required to answer under penalty of law, and are liable to prosecution if false answers are given. For this purpose a small army of investigators is essential, numbering in the aggregate fifty thousand people. The country is divided into three hundred districts, each of which is put under the control of a supervisor, and for each subdivision an enumerator is appointed, who is expected to make a return for from 2,000 to 4,000 of population. The statistics of manufactures are severally collected by special agents. The enumerators are all required to complete their work in thirty days from June 1, 1900, while more time is given to collectors of statistics of manufactures. All these facts are reported on schedules, which constitute what may be called the raw material with which the Census Office has to deal.

Second, the Census Office itself may be regarded as a great manufacturing establishment in which this raw material is collected into printed books. Referring only to the population, it may be said that this conversion involves four distinct processes. In the first of these the facts recorded on the schedules are transferred to cards, one card for every individual enumerated, in which holes are punched according to various possible answers to questions contained in the schedule. There are on each card two hundred and forty distinct positions which any particular hole may occupy. The position of the hole shows its significance. The second process is that in which these cards are counted by electricity. The electrical counting-machine used in the last census is the invention of Herman Hollerith. It is so contrived that needles passing through the punched holes on each card form electrical connections which operate clock-faced dials, showing numbers corresponding to each individual fact or combination of facts. The third process consists in entering the number on result slips and combining them in tabular form as copy for the printer. The final process is the setting-up of the type and the preparation of the stereotyped plates for the press.

All this is very simple in theory and in practice, but it involves an enormous amount of work. The work done in the last census was equivalent to between 6,000 and 7,000 years for one man. The weight of the cards used was 200 tons, and of the schedules returned by the enumerators 150 tons. There is not a day during the continua-

tion of the census work in which it is not necessary to handle four or five tons of paper, while the number of clerks and other employés in the office is about 3,000. To organize and govern a force like this, for the most part untrained and collected almost at hazard from the general population, requires far more than ordinary intellectual and executive ability. The census act directs that this immense undertaking shall be completed in its main outlines by the 1st of July, 1902, or a little more than two years from the taking of the census. It may be doubted whether Congress knew what is implied in this requirement, but the Director and his assistants are determined to comply with it if possible. In order so to do certain conditions are essential, namely, a sufficient number of clerks, competent clerks, a proper house in which to carry on the work, and non-interference on the part of Senators and Congressmen with the government and discipline of the office. A building in which each of the above processes will be conducted in a single room on the ground floor, lighted by skylights in the roof, has been constructed in a convenient location for the especial use of the Census.

GEOGRAPHIC NOMENCLATURE

Mr R. T. Hill's discussion of "Porto Rico or Puerto Rico" raises a question which should be settled on a rational and permanent basis as quickly as possible, before the usage of tourists, newspapers and their reporters is more widely claimed as making precedent and constituting authority in the spelling and pronunciation of the geographical names of the countries that have lately come under the United States flag.

Mr Hill, whose excellent volume on the West Indies could scarcely have been written without a competent knowledge of the Spanish language, can hardly be serious in alleging that "Puerto" is unphonetic and unpronounceable by English-speaking lips. Still less seriously can he believe that the rules of the Geographic Board are intended to imply the adoption by all nations, untranslated, of such politically significant and often temporary compound names as "The United States," any more than they would require the German Empire to be called "Das Deutsche Reich" in this country. That the supposed difficulty is largely imaginary is plainly shown by the fact that in California far more troublesome names than "Puerto" are spelled as in Spanish, and are yet correctly pronounced by all but newcomers to the State. That during the late war the popular pronunciation of Santiago and San Diego was almost identical merely proves the great need of reform in English spelling; it certainly does not argue either that we should adopt the mistake or change the spelling of either name.

Long before there was a Board on Geographic Names the American missionaries in the Hawaiian Islands solved in a simple and sensible fashion the almost insuperable difficulty of spelling the native names and language so as to have them correctly pronounced by English-speaking people and the world at large. They simply adopted for the vowel sounds the letters consistently representing them in the Spanish, Italian, and German (and Sanscrit) languages, which are also current in the Orient in the case of the *lingua franca;* although this has been disregarded by the English in India, and has thus given rise to endless mispronunciations of the geographical names of that country. The question now before us is whether we are to repeat this blunder in our new possessions instead of adopting the sensible expedient of the New England missionaries above referred to, thus gradually working toward a popular understanding of phonetic spelling. We might then hope to get rid, by degrees, of the present orthography (or rather kakography) of the English language. Those who fondly hope to see English become the world-language can hardly expect to realize their dream so long as the present inconsistent spelling is continued; since it not only constitutes an obstacle to the learning of the language by foreigners, but wastes an enormous amount of precious time in our schools in spelling exercises whose intrinsic educational value is about equaled by that of the interconversion of mediæval weights, measures, and coins that so long constituted a favorite and long-protracted theme in our school arithmetics.

With the necessity of more language study in our schools, in order to conform to the requirements of the new territorial acquisitions and of Pan-American commerce as well, our people will soon use their practical common sense with good effect upon these questions, and will find that what has been possible in California and Hawaii can as well be done by the nation as a whole, even if our British brethren should persist in further mutilating the geographical names of their possessions. I trust that whether in the future we write and say Porto Rico (Portuguese) or Puerto Rico (Spanish), the policy of the Geographic Board to conserve to the utmost extent possible the native pronunciation and spelling of names will be maintained as the only means of avoiding the most dismal and discreditable medley on our maps and in our official documents, and the indefinite aggravation of the evil which unprogressive jingoism, whether English or American, would impose upon ourselves, and especially upon posterity.

E. W. Hilgard.

University of California.

PUERTO RICO, NOT PORTO RICO

The controversy over the name of this island has been brought to a highly satisfactory termination by the President of the United States, who has decided that the official spelling shall be *Puerto* Rico, on the ground that that is the form in use "by the people of the island themselves." This decision was rendered in response to a letter addressed to the President by the Chairman of the U. S. Board on Geographic Names, in which reference was made to the embarrassment arising from the non-uniformity of spelling prevailing in the executive

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departments. The President's decision is gratifying not only as the final settlement of a question into the discussion of which an astonishing amount of feeling and even some misrepresentation have been imported, but also and especially for the reason that it is founded specifically upon the fact that Puerto Rico is the form in local use, thus sustaining that important feature of the policy of the board which makes local usage the principal factor in the determination of the official spelling of geographic names by the government of the United States. That the official form will speedily come into general use can scarcely be doubted. That rich legacy of Spanish names, so euphonious and so full of meaning, which constitutes a large part of the geographic nomenclature of California and the states and territories of the southwest, has been accepted by the American people without question, as have also the Indian names so common in many parts of the country. There is no demand for nor tendency toward the simplification of names far more difficult, both as to spelling and pronunciation, than Puerto Rico, and the proper spelling of the name of our new island possession will undoubtedly commend itself to the country at large.

J. H.

GEOGRAPHIC LITERATURE

Hawaiian America: Something of its History, Resources, and Prospects. By Caspar Whitney. Pp. 357, with maps and illustrations. New York and London: Harper & Bros. 1899.

This is a history of the islands and a description of their present industrial, social, and political condition, written in an easy, entertaining style, and profusely illustrated with admirable half-tone cuts. It contains five maps, four of which are somewhat detailed charts of the islands. H. G.

The New-born Cuba. By Franklin Matthews. Pp. 389. New York and London: Harper & Bros. 1899.

This is the story of the early stages of reconstruction in Cuba, a page of history not yet a year old. It tells of the installation and working of the military government, of the sanitation of the towns, the relief of the starving, and the attitude of the people toward the future. The author sums up his conclusions at the end of the preface as follows: "Cuba's future, it is safe to predict, will reveal and justify the wise and beneficent acts of the American officials during the most critical part of American occupation, namely, its beginning and early growth. . . . Whatever may be the result of later complications, American occupation of Cuba assuredly was started right." The book is beautifully illustrated with half-tone cuts. H. G.

Practical Exercises in Elementary Meteorology. By Robert DeCourcy Ward, Instructor in Climatology in Harvard University. Pp. xiii + 199. Boston: Ginn & Company. 1899. $1.25.

The especial attention of teachers should be called to this important publication, which is simply a manual for their guidance in teaching meteorology in high schools and academies. It is, in fact, an orderly publication of the many

results of the wide experience of Professor Wm. M. Davis and Mr Ward in teaching meteorology during the past fifteen years at Harvard University. It may even be described as the natural outcome of the methods of teaching this subject that the present writer inaugurated in 1881–'82 for the guidance of the pupils of the Normal School at Washington. Our ideas with regard to education, in meteorology as in every other branch of science, have now come to agree on one fundamental principle, viz., that personal experience, laboratory practice, and individual work are infinitely superior as methods of instruction to the old-fashioned study of text-books. School boards and parents must demand and teachers must be able to give this higher sort of instruction before it can become common in the schools. To this end Mr Ward's "Practical Exercises" will powerfully contribute.

Mr Ward begins by requiring the pupil (and why not also the teacher?) to keep his own personal record of the weather. At first no instruments are to be used, but afterward the thermometer, anemometer, rain gauge, psychrometer, and barometer are successively introduced; eventually the nephoscope, thermograph, and barograph appear. The use of these instruments of course implies that the observer shall have a general understanding of their methods of action, the errors to which they are subject, and the application of the numerical corrections that are given in the tables also published in Mr Ward's book.

It is not designed or desired that the classes for which this book is written should go very deeply into the complex problems of meteorology. As Mr Ward says, complicated matters should be left to later years. "The teacher who has a fairly good knowledge of one comprehensive modern text book of meteorology will find himself sufficiently well equipped to answer the questions that will be put by the class." The first care of the teacher must be to stimulate good habits of observation and of careful generalization; the search for hidden causes and true explanations must come later. "The interest of a class can easily be kept up throughout a school year by means of a progressive system of observations." The study of the weather should be begun in the lower, if not the lowest, grades of the ordinary grammar school. It is therefore necessary that teachers should have studied the subject previously in their normal schools, a fact that the employés of the Weather Bureau have for twenty years past been constantly emphasizing. Mr Ward believes that the higher instrumental observations, such as the barometer, psychrometer, and nephoscope, may be profitably undertaken in the high school years if not in the last year of the grammar school.

Chapters IV–VII deal with the weather map, its construction and use; chapter IX with the direction of the wind in its relation to the gradient of pressure, and chapter X with the velocity of the wind. After this follow the chapters on cyclones and anticyclones, methods of studying the winds, the weather sequences, the temperatures of the air at different heights, the diurnal variation of direction and velocity of wind. Finally, the observation and formation of dew, frost, and clouds completes the book, which is full of good suggestions to both teachers and scholars.

Fortunately, meteorology may be studied in city schools quite as satisfactorily as in the country, as has been abundantly demonstrated by every-day experience in Brooklyn.

The strong point of the present handbook is that it does not attempt to handle difficult scientific problems. It is adapted to every one's capacity, but it requires that the pupil acquire habits of accurate observation and logical reasoning, instead of the inaccurate and illogical processes that so commonly prevail. We believe that it will exert a strong and beneficial influence in the grammar and high schools of the country.

CLEVELAND ABBE.

CORRESPONDENCE

ROYAL SCOTTISH GEOGRAPHICAL SOCIETY, QUEEN STREET,
EDINBURGH, *November 30, 1899.*

The Editor, The National Geographic Magazine, Washington, D. C.

DEAR SIR: In your November number, opposite page 449, you reproduce our map of northwest Canada and southwest Alaska, and this map is adduced as a proof that, "even after the Joint High Commission had been agreed upon, the best informed British cartographers had not become aware of any conflicting claim," referring to the boundary between British territory and Alaska.

First of all, I must admit that the map is very badly printed [in our Magazine]. Nevertheless, if Mr Foster had examined it attentively he would have seen that the pink coloring, representing British territory, extends to the west of the line claimed by the United States; indeed, owing to bad printing, it extends over some of the islands belonging to the United States. Of course, the copy in the NATIONAL GEOGRAPHIC MAGAZINE does not show this, being in black and white only.

We do not discuss at length political questions, but as shown by one or two notes (on page 488, volume xi), we are quite aware of the questions in dispute relating to the boundary and should not publish a map that was erroneous in this respect unless due, as in this case, to bad printing.

Yours very truly,

W. A. TAYLOR,
Acting Editor, The Scottish Geographical Magazine.

THE Russian Government is making preparation for the construction of a new railway from southern European Russia to Turkestan. This will considerably shorten the route from the commercial centers of Russia to Central Asia.

ON October 24 the government of General Castro announced to the representatives of foreign nations its exercise of governmental functions throughout the Republic of Venezuela. It was recognized as a *de facto* government by Great Britain on November 18 and by the United States on November 21.

THE first grain elevator ever constructed in the Netherlands has just been completed at Amsterdam by the municipal government. Its total capacity is from 16,000 to 18,000 metric tons, its maximum receiving capacity 440,920 pounds per hour, and its discharging capacity, on the harbor side, 220,460 pounds per hour.

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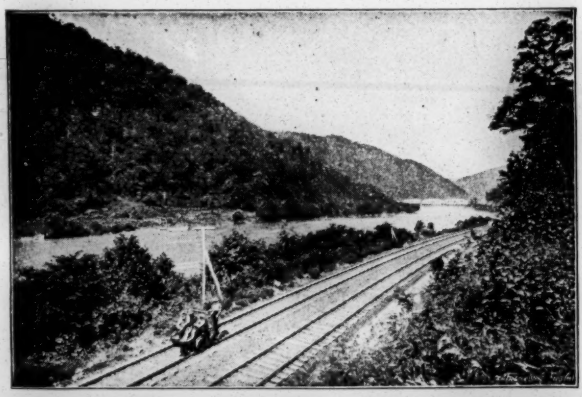

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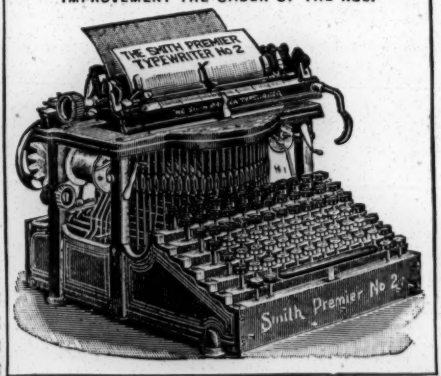

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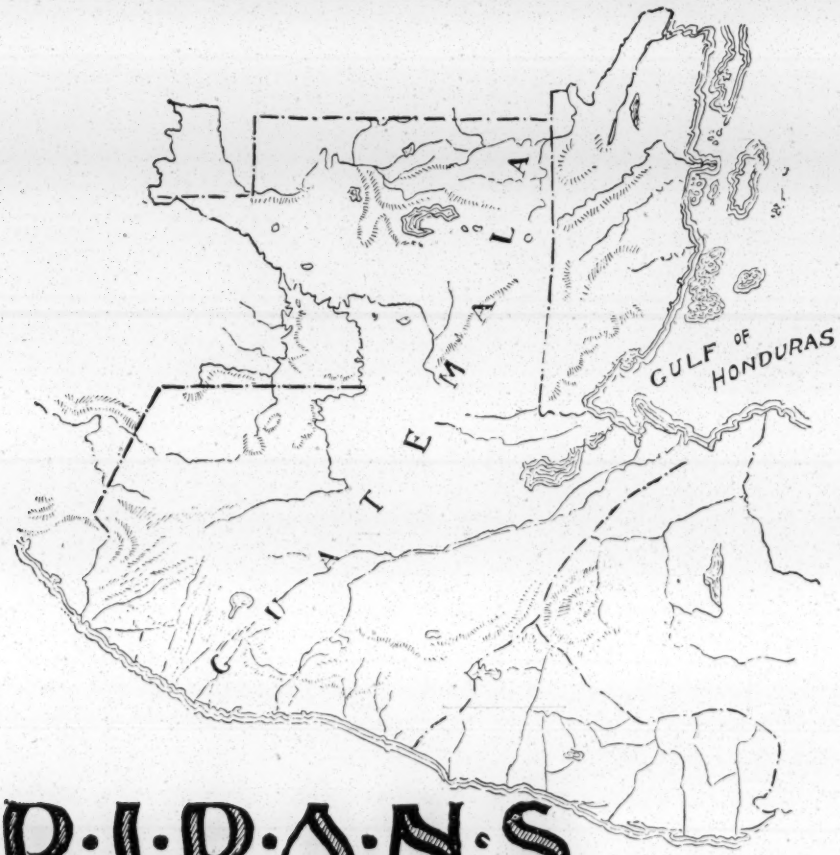

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